

WHAT IS CLAIMED IS:

1. A distance measurement apparatus comprising:
  - electromagnetic wave generating means for generating and
  - 5 transmitting an electromagnetic wave;
  - scanning means for periodically changing a direction in which the electromagnetic wave is transmitted from the electromagnetic wave generating means;
  - receiving means for receiving an echo wave caused by
  - 10 reflection of the electromagnetic wave at an obstacle;
  - first driving means for repetitively driving the electromagnetic wave generating means a plurality of times per one period of the change of the direction by the scanning means, and thereby for causing the electromagnetic wave generating means to
  - 15 repetitively generate and transmit a distance measurement electromagnetic wave;
  - first calculating means for measuring a time interval between a moment of every generation and transmission of the distance measurement electromagnetic wave by the electromagnetic wave
  - 20 generating means in response to drive by the first driving means to a moment of reception of a corresponding echo wave by the receiving means, and for calculating a distance to an obstacle on the basis of the measured time interval;
  - second driving means for, before the first driving means
  - 25 drives the electromagnetic wave generating means, driving the electromagnetic wave generating means and thereby causing the

electromagnetic wave generating means to generate and transmit a judgment electromagnetic wave having an energy smaller than that of the distance measurement electromagnetic wave; and

obstacle judging means for judging whether an obstacle is

- 5 present or absent on the basis of conditions of reception of an echo wave corresponding to the judgement electromagnetic wave by the receiving means, for permitting the first driving means to drive the electromagnetic wave generating means next in cases where it is judged that an obstacle is absent, and for inhibiting the first driving
- 10 means from driving the electromagnetic wave generating means next in cases where it is judged that an obstacle is present.

2. A distance measurement apparatus comprising:

electromagnetic wave generating means for generating and

- 15 transmitting an electromagnetic wave;

scanning means for periodically changing a direction in which the electromagnetic wave is transmitted from the electromagnetic wave generating means;

receiving means for receiving an echo wave caused by

- 20 reflection of the electromagnetic wave at an obstacle;

first driving means for repetitively driving the

electromagnetic wave generating means a plurality of times per one period of the change of the direction by the scanning means, and thereby for causing the electromagnetic wave generating means to

- 25 repetitively generate and transmit a distance measurement electromagnetic wave;

first calculating means for measuring a time interval between a moment of every generation and transmission of the distance measurement electromagnetic wave by the electromagnetic wave generating means in response to drive by the first driving means to a moment of reception of a corresponding echo wave by the receiving means, and for calculating a distance to an obstacle on the basis of the measured time interval;

second driving means for, before the driving means drives the electromagnetic wave generating means, driving the electromagnetic wave generating means and thereby causing the electromagnetic wave generating means to generate and transmit a judgment electromagnetic wave having an energy smaller than that of the distance measurement electromagnetic wave; and

obstacle judging means for judging whether an obstacle is present or absent on the basis of conditions of reception of an echo wave corresponding to the judgement electromagnetic wave by the receiving means, for causing the first driving means to drive the electromagnetic wave generating means next to generate and transmit a first distance measurement electromagnetic wave in cases where it is judged that an obstacle is absent, and for causing the first driving means to drive the electromagnetic wave generating means next to generate and transmit a second distance measurement electromagnetic wave in cases where it is judged that an obstacle is present, wherein the second distance measurement electromagnetic wave is lower in energy than the first distance measurement electromagnetic wave.